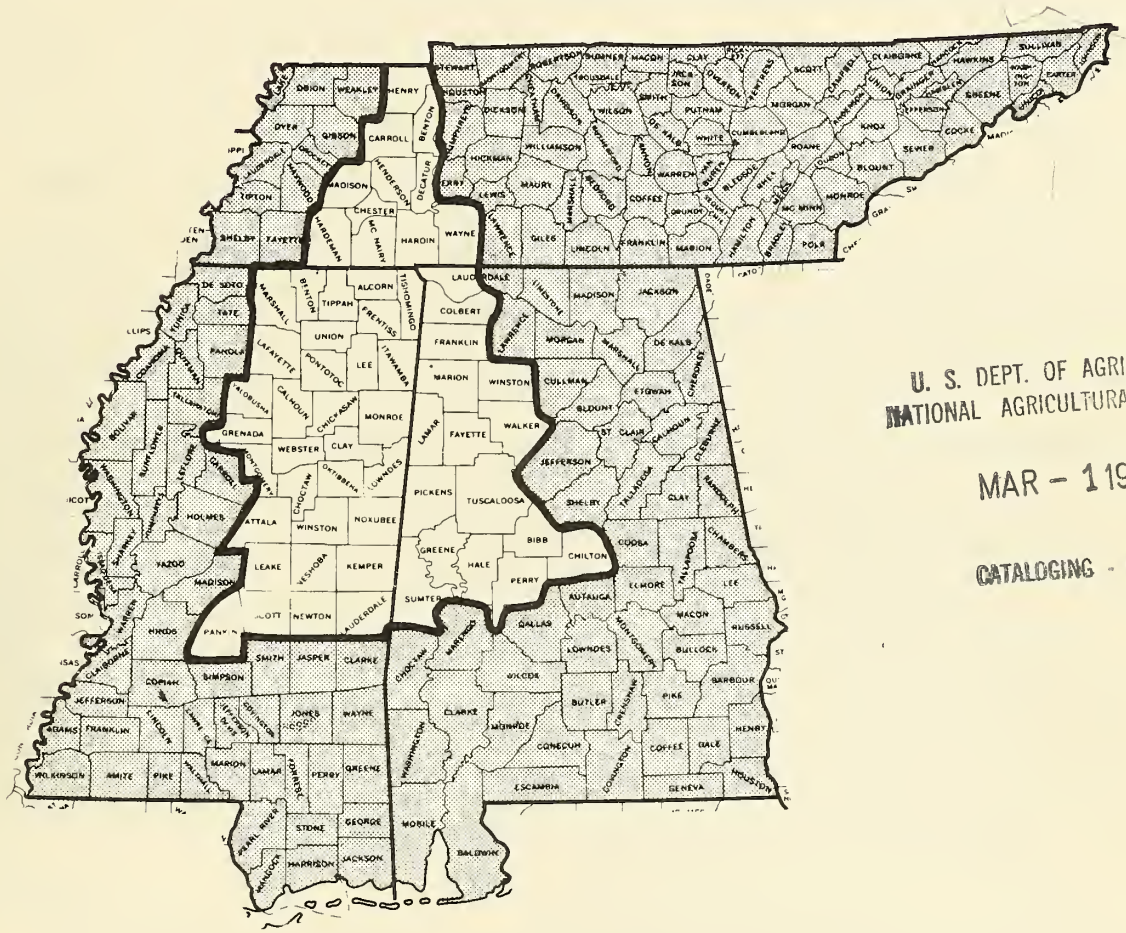
SOIL SURVEY INTERPRETATIONS FOR WOODLANDS IN THE SOUTHERN COASTAL PLAIN AND BLACKBELT AREAS OF ALABAMA, MISSISSIPPI, AND TENNESSEE

With Average Rainfall of 25 to 30 Inches During the Frost-Free Period



PROGRESS REPORT W-1 - JULY 1968

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Fort Worth, Texas

4-27294 11-68
USDA-SCS-FORT WORTH, TEX. 1968

This report contains interpretations of soil surveys for woodland use and management in the Southern Coastal Plain and Blackbelt areas of Alabama, Mississippi, and Tennessee, with mean precipitation of 25 to 30 inches during the frost-free period. The purpose is to provide currently available knowledge about soils as they relate to the establishment, growth, management, and harvesting of wood crops for the use of foresters, agricultural workers, woodland owners, and woodland managers. The information will be used by the Soil Conservation Service and cooperating agencies in the development of work unit (county) technical guides, soil handbooks, and published soil survey reports.

Field information was gathered by teams of foresters and soil scientists. Representatives of Federal and State agencies, the wood-using industry, and others cooperated in gathering field data. Information obtained from soil-woodland studies was recorded by soil taxonomic units. The interpretations presented herein are made for use with soil surveys.

Table 2, SOIL RATINGS FOR WOODLAND USE, includes some evaluations for individual soil units. The soil series listed are those defined according to the current soil classification system. In column one (1) the mapping units including slope and erosion phases, and textural classes, were consolidated within a soil series where it was determined there were no differences in productivity, species suitability, or management problems.

Column two (2) includes a list of some of the commercially important tree species which are adapted to the soil in column one. These are the tree species which woodland managers will generally favor in intermediate or improvement cuttings, after considering the form and vigor of individual trees. Priority between species will be influenced by local marketability

and the owner's objectives, as well as by growth rates, values, and the quality of wood products from a given species.

Column three (3) indicates the average site index for the most important species listed in column two. The standard deviation is shown as a plus or minus figure (±) for each species where five or more plots were taken on the soils listed in column one. The site index curves used for each tree species are shown in Table 1, GUIDE FOR WOODLAND SUITABILITY CLASSES. An asterisk (*) following the site index rating indicates the rating is an estimate based on the same species on a similar soil, or by comparison with another species on the same soil. Site index is the average height of dominant trees at the age 30 for cottonwood, age 35 for sycamore, and age 50 for all other species.

Column four (4) indicates the range of site index of the most important tree species in column two. The range in site index values is dependent on soil physical conditions, aeration, and nutrient and moisture availability during the growing season.

Column five (5) evaluates the potential erosion hazard of the soil in woodland use following cutting operations, or where the soil is exposed along roads, trails, firebreaks, or log-yarding areas. A rating of slight indicates that problems of erosion control are unimportant. A rating of moderate indicates some attention must be given to prevent unnecessary soil erosion. A rating of severe indicates that intensive treatments, or special equipment and methods of operation should be planned to minimize soil erosion. The potential erosion hazard is based on slope, soil depth, and erodibility, and soil loss tolerance.

Column six (6) includes evaluation of equipment restrictions. Ratings reflect limitations in the use of equipment for managing or harvesting the

tree crop. A rating of slight indicates equipment use is seldom limited in kind or time of year. A rating of moderate indicates a need for modified equipment or seasonal restrictions due to slope, stones, obstructions, soil wetness, flooding, or overflows. A rating of severe indicates the need for specialized equipment due to one or more of the factors listed above.

Column seven (7) indicates the degree of expected seedling mortality during the first two growing seasons after planting or seeding. Normal rainfall, adequate site preparation, good planting stock, proper planting methods, and appropriate protection and cultivation are assumed. A rating of slight indicates that unsatisfactory survival on less that 25 percent of the area is likely. A rating of moderate indicates that unsatisfactory survival is likely on 25 to 50 percent of the area planted. A rating of severe indicates that unsatisfactory survival is likely on more than 50 percent of the area.

Column eight (8) lists several suitable tree species for planting on the soil named in column one. The list may include some species which do not normally occur in native stands on the designated soil or in this physiographic area, as well as some of the important species listed in column two.

Column nine (9) shows the ordination of the soil units into a woodland suitability group. A woodland suitability group is made up of kinds of soil that are capable of producing similar kinds of wood crops, that need similar management to produce these crops, and that have about the same potential productivity. The ordination system and the suitability group symbols are explained in the following paragraphs.

The first element of the group symbol indicates the woodland suitability class. It expresses site quality by an arabic numeral ranging from 1 to 5,

with class 1 the highest in potential productivity, followed by class 2, 3, 4, and 5. It is based on the average site index of one or more indicator forest types or tree species, as shown in Table 1, GUIDE FOR WOODLAND SUITABILITY CLASSES. The indicator species are underscored in column two of Table 2.

The second element in the symbol indicates the suitability subclass. It expresses selected soil properties that cause moderate to severe hazards or limitations in woodland use or management, by one of the following lower case arabic letters:

Subclass x (stoniness or rockiness). Soils having restrictions or limitations for woodland use or management due to stones or rocks.

Subclass w (excessive wetness). Soils in which excessive water, either seasonally or year long, causes significant limitations for woodland use or management. These soils have restricted drainage, high water tables, or overflow hazards which adversely affect either stand development or management.

Subclass t (toxic substances). Soils that have, within the rooting zone, excessive alkalinity, acidity, sodium salts, or other toxic substances that limit or impede development of desirable tree species.

Subclass d (restricted rooting depth). Soils with restrictions or limitations for woodland use or management due to restricted rooting depths. Soils shallow to hard rock, hardpan, or other layers in the soil that restrict roots are examples.

Subclass c (clayey soils). Soils having restrictions or limitations for woodland use or management due to the kind or amount of clay in the upper portion of the soil profile.

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Subclass s (sandy soils). Sandy soils with little or no textural B horizons and having moderate to severe restrictions or limitations for woodland use or management. These soils impose equipment limitations, have low moisture-holding capacity, and normally are low in available plant nutrients.

Subclass f (fragmental or skeletal soils). Soils with restrictions or limitations for woodland use or management due to large amounts of coarse fragments in the profile over 2 mm and less than 10 inches, but includes flaggy soils.

Subclass r (relief or slope steepness). Soils with restrictions or limitations for woodland use or management due only to steepness of slope.

Subclass o (slight or no limitations). Soils with no significant restrictions or limitations for woodland use or management.

Some kinds of soil may have more than one set of subclass characteristics. Priority in placing each kind of soil into a subclass is in the order that the subclass characteristics are listed above.

The third element in the symbol indicates the degree of hazards or limitations, and the general suitability of the soils for certain kinds of trees. The three management problems considered here are: (1) erosion hazard, (2) equipment restrictions, and (3) seedling mortality.

The numeral 1 indicates soils with no to slight management problems, and they are best suited for needleleaf trees.

The numeral 2 indicates soils with one or more moderate management problems, and they are best suited for needleleaf trees.

The numeral 3 indicates soils with one or more severe management problems, and they are best suited for needleleaf trees.

The numeral 4 indicates soils with no to slight management problems, and they are best suited for broadleaf trees.

The numeral 5 indicates soils with one or more moderate management problems, and they are best suited for broadleaf trees.

The numeral 6 indicates soils with one or more severe management problems, and they are best suited for broadleaf trees.

The numeral 7 indicates soils with no to slight management problems, and they are suitable for either needleleaf or broadleaf trees.

The numeral 8 indicates soils with one or more moderate management problems, and they are suitable for either needleleaf or broadleaf trees.

The numeral 9 indicates soils with one or more severe management problems, and they are suitable for either needleleaf or broadleaf trees.

The numeral 0 indicates the soils are not suitable for the production of major commercial wood products.

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TABLE 1 - GUIDE FOR WOODLAND SUITABILITY CLASSES
SOUTHERN COASTAL PLAIN AND BLACKBELT

Indicator Forest Type or Species		1 Very High	2 High	3 Moderately High	4 Moderate	5 Low
		Site Index				
Cottonwood	(1)	106+	96-105	86-95	76-85	75-
Yellow-poplar	(2)	106+	96-105	86-95	76-85	75-
Sweetgum	(3)	96+	86-95	76-85	66-75	65-
Water oaks	(4)	96+	86-95	76-85	66-75	65-
Nuttall oak	(11)	96+	86-95	76-85	66-75	65-
Loblolly pine	(5)	96+	86-95	76-85	66-75	65-
Slash pine	(6)	96+	86-95	76-85	66-75	65-
Shortleaf pine	(5)	86+	76-85	66-75	56-65	55-
Longleaf pine	(6)	86+	76-85	66-75	56-65	55-
Sand pine	(7)	86+	76-85	66-75	56-65	55-
Sou.-red oak	(8)	86+	76-85	66-75	56-65	55-
Water tupelo	(9)	86+	76-85	66-75	56-65	55-
Redcedar	(10)	66+	56-65	46-55	36-45	35-

(1) Broadfoot, W. M., 1960, Field Guide for Evaluating Cottonwood Sites, USFS Occ. Paper 178 (Fig. 4).
(2) Doolittle, W. T., 1957, Site Index Curves for Yellow-poplar-So. Appalachians.
(3) Broadfoot, W. M., 1959, Guide for Evaluating Sweetgum Sites, USFS Occ. Paper 176 (Fig. 4).
(4) Broadfoot, W. M., 1963, Guide for Evaluating Water Oak Sites in the Mid-south, USFS Res. Paper SO-1 (Fig. 4)
(5) Coile, T. S. and F. X. Schumacher, Jour. For. 55:432-435 (Fig. 4).
(6) U.S. Forest Service, 1929, Volume, Yield, and Stand Tables for Second Growth Southern Pines, USDA Misc. Publ. 50. (Fig. 2, 3, 4).
(7) Coile, T. S. and F. X. Schumacher, 1960, Growth and Yields for Natural Stands of the Southern Pine (Fig. 61).
(8) Olson, D. G., 1959, Site Curves for Upland Oaks in Sou. Appalachians, SE For. Expmt. Sta. Res. Note 125.
(9) Applequist, M. B., 1959, Soil-Site Studies, Sou. Hardwoods (Fig. 7).
(10) TVA 1948, Site Curves, E. Redcedar, Tennessee Valley.
(11) Broadfoot, W. M., Unpublished manuscript. Sou. For. Expmt. Sta., 1966.

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Table 3, SOIL GROUPINGS ACCORDING TO WOODLAND SUITABILITY, is a summary of the most important interpretations for a woodland suitability group of soils.

Column one (1) includes the suitability group symbol and a brief description of the group of soils, including their important hazards and limitations for woodland use and management.

Column two (2) is a tabulation of the soil units within each woodland suitability group.

Column three (3) is a list of some commercially-important tree species which occur on the soils in each suitability group.

Column four (4) shows the site class (site index rounded off to the nearest 10-foot interval) for the most important tree species listed in column three.

Column five (5) lists some of the most important tree species which are suitable for planting or direct seeding on the soils in each suitability group.

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TABLE 2. SOIL RATINGS FOR WOODLAND USE

Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Alaga loamy sand 0-30% slopes	Loblolly pine Shortleaf pine	78±6 71±6	72-85 65-76	slight	moderate	severe	Loblolly pine Shortleaf pine	3s3
Angie fine sandy loam 0-5% slopes	Loblolly pine Sweetgum Shortleaf pine Red oaks White oaks Water oaks	86±4 90* 79 - - -	80-90 80-100 70-80 - - -	slight	moderate	slight	Loblolly pine Slash pine	2w8
Atmore fine sandy loam to silt loam 0-5% slopes	Loblolly pine Sweetgum Water oaks Tupelos	84 80* - -	80-90 75-85 - -	slight	severe	severe	Loblolly pine Slash pine Sweetgum	3w9
Aycock fine sandy loam to silt loam 0-12% slopes	Loblolly pine Shortleaf pine	81±5 79±4	75-87 70-84	slight	slight	slight	Loblolly pine	3o1
Benndale fine sandy loam to loamy sand 0-12% slopes slight or moderately eroded	Loblolly pine Shortleaf pine	82±5 70	75-87 65-75	slight	slight	slight	Loblolly pine	3o1
Bibb ** fine sandy loam to very fine sandy loam 0-5% slopes	Loblolly pine Sweetgum Green ash Cottonwood Nuttall oak Cherrybark oak Water oak Willow oak Sycamore Yellow-poplar Shumard oak White oaks Tupelos Shortleaf pine	92±7 90±9 86±12 100 102±8 95±6 90±10 91±8 - - - - - -	80-97 78-97 64-98 80-110 90-109 83-100 78-97 81-95 - - - - - -	slight	severe	severe	Loblolly pine Sweetgum Cottonwood Yellow-poplar Cherrybark oak Sycamore Nuttall oak Green ash	2w9
Bienville sandy loam to loamy sand 0-12% slopes	Loblolly pine Shortleaf pine Longleaf pine	80* 70* 70*	75-86 65-75 65-75	slight	moderate	severe	Loblolly pine Slash pine Shortleaf pine	3s3
Binnsville clay to silty clay 0-12% slopes slight to severely eroded	E. redcedar	40	35-45	slight to moderate	moderate	severe	E. redcedar	4d3c

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	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Boswell sandy loam to silt loam 0-1% slopes slight to moderately eroded	Loblolly pine Shortleaf pine	82±4 72±4	74-87 67-77	slight	moderate	moderate	Loblolly pine Shortleaf pine	3c2
clay or silty clay 5-17% slopes severely eroded	Loblolly pine Shortleaf pine	73±9 66±6	66-82 60-73	moderate	moderate	moderate	Loblolly pine	4c2
Bowie sandy loam to loamy fine sand 0-12% slopes slight or moderately eroded	Loblolly pine Shortleaf pine	83±4 77±4	76-88 70-82	slight	slight	slight	Loblolly pine Shortleaf	3o1
Brookeville clay 0-12% slopes slight to severely eroded	E. redcedar	40	-	slight to moderate	moderate	moderate	E. redcedar	4c2c
Cahaba ** sandy loam to loamy fine sand 0-17% slopes	Loblolly pine Sweetgum Cherrybark oak Red oaks White oaks	88±5 90* 90* - -	80-95 80-100 80-100 - -				Loblolly pine Yellow-poplar Cherrybark oak Shumard oak	2o7
lower slopes and terraces	Sycamore Yellow-poplar	- -	- -					
				slight	slight	slight		
upper slopes	Loblolly pine Shortleaf pine	82 66	75-86 60-74				Loblolly pine Shortleaf pine	3o1
Carnegie loam to loamy fine sand 2-8% slopes	Loblolly pine Longleaf pine Shortleaf pine	80 70 70	72-86 65-75 65-75	slight	slight	slight	Loblolly pine Slash pine	3o1
Catalpa ** silty clay to silty clay loam 0-5% slopes	Cottonwood Sweetgum Green ash Sycamore Hackberry Elms	108 100 101 - - -	88-118 88-107 79-106 - - -	slight	moderate	moderate	Cottonwood Sweetgum Sycamore	1w5

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Chastain ** silt loam to fine sandy loam 0-5% slopes	Loblolly pine Sweetgum Cottonwood Greenash Water oak Willow oak Nuttall oak Cherrybark oak Shumard oak Sycamore Yellow-poplar White oaks Tupelos	90±5 94±11 90 88±10 89±13 92±9 110±3 89±4 - - - - -	85-97 82-101 70-100 66-93 77-96 82-96 98-112 77-94 - - - - -	slight	severe	severe	Cottonwood Sweetgum Nuttall oak Cherrybark oak Sycamore Yellow-poplar	2w9
Eustis loamy fine sand to sand 0-17% slopes	Loblolly pine Shortleaf pine	78±3 71±5	74-85 65-76	slight	moderate	severe	Loblolly pine Slash pine Shortleaf pine	3s3
Eutaw clay to silty clay loam 0-5% slopes	Sweetgum Loblolly pine Red oaks White oaks E. redcedar	80 83±3 - -	70-90 75-90 - -	slight	moderate	moderate	E. redcedar Loblolly pine	3c8
Forkland fine sandy loam to loam 0-5% slopes	Loblolly pine Sweetgum Red oaks White oaks	90 90* 80* 80*	85-95 85-95 - -	slight	slight	slight	Loblolly pine Sweetgum	2o7
Garner clay to clay loam 0-12% slopes	Loblolly pine Shortleaf pine	78±6 68±5	70-85 60-75	slight	moderate	moderate	Loblolly pine Shortleaf pine	3c2
Guin gravelly fine sandy loam slight to moderately eroded 0-17% slopes	Loblolly pine Shortleaf pine	66±3 60	60-70 55-65	slight	moderate	moderate	Shortleaf pine	4f2
Harleston loam to ~~loamy~~ fine sand 0-12% slopes	Loblolly pine Shortleaf pine Sweetgum Red oaks White oaks	90* 80* 90* - -	85-95 75-85 85-95 - -	slight	moderate	slight	Loblolly pine Slash pine	2w8
Houlka ** clay to silty clay loam 0-5% slopes	Sweetgum Green ash Cottonwood Cherrybark oak Nuttall oak Water oak Willow oak Sycamore Yellow-poplar Red oaks White oaks	105* 85±5 105* 105* 100* 100* 100* - - - -	95-110 63-97 85-115 90-110 90-105 90-105 90-105 - - - -	slight	severe	severe	Sweetgum Cottonwood Cherrybark Nuttall oak Sycamore Yellow-poplar	1w6

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Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Houston clay 0-8% slopes slight to moderately eroded	E. redcedar	40	35-45	slight	moderate	moderate	E. redcedar	4c2c
Iuka ** silt loam to fine sandy loam 0-5% slopes	Loblolly pine	97±7	90-106	slight	moderate	moderate	Sweetgum Loblolly pine Cottonwood Yellow-poplar Sycamore Cherrybark oak Nuttall oak	1w8
	Sweetgum	102±6	90-109					
	Cottonwood	100*	80-115					
	Cherrybark oak	101±2	89-108					
	Water oak	100±9	88-107					
	Nuttall oak	105	93-107					
	Sycamore	-	-					
	Yellow-poplar	-	-					
	Red oaks	-	-					
	White oaks	-	-					
Izagora ** silt loam to fine sandy loam 0-5% slopes	Loblolly pine	86	80-95	slight	moderate	moderate	Loblolly pine Sweetgum Yellow-poplar	2w8
	Sweetgum	90*	80-100					
	Cherrybark oak	-	80-100					
	Yellow-poplar	-	-					
	Red oaks	-	-					
	White oaks							
Kalmia ** loamy sand 0-12% slopes	Sweetgum	-	80-90	slight	slight	slight	Loblolly pine Yellow-poplar Sweetgum Cherrybark oak	2o7
	Loblolly pine	88±5	80-95					
	Yellow-poplar							
	Red oaks							
lower slopes	White oaks							
	Black tupelo							
upper slopes	Loblolly pine	80	75-85	slight	slight	slight	Loblolly pine Slash pine	3o1
	Shortleaf pine	70	65-75					
Kaufman ** clay 0-5% slopes	Sweetgum	-	90-110	slight	severe	moderate to severe	Sweetgum Sycamore Cherrybark oak Nuttall oak Cottonwood	1w6
	Cottonwood	-	90-120					
	Cherrybark oak	-	90-110					
	Water oak	-	90-105					
	Nuttall oak	-	95-110					
	Sycamore	-	-					
	White oaks	-	-					
	Red oaks	-	-					
	Green ash	-	-					
	Red maple	-	-					
	Elms	-	-					
Kipling ** clay loam to fine sandy loam 0-5% slopes	Sweetgum	-	80-100	slight	moderate	moderate	Sweetgum Cherrybark oak Shumard oak Loblolly pine	2c8
	Cherrybark oak	-	80-100					
	Water oak	-	-					
	Shumard oak	-	-					
	Durand oak	-	-					
	White oaks	-	-					
	Loblolly pine	90	80-100					
Lauderdale stony sandy loam to loamy sand 0-30% slopes	Loblolly pine	70	65-75	slight	moderate	moderate	Shortleaf pine Loblolly pine	4x2
	Shortleaf pine	60	55-65					

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	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Leaf ** silt loam to fine sandy loam 0-5% slopes	Sweetgum	-	80-100	slight	severe	severe	Loblolly pine Sweetgum Cherrybark oak Shumard oak	2w9
	Loblolly pine	86±4	80-94					
	Cherrybark oak	-	-					
	Shumard oak	-	-					
	Water oak	-	-					
	Nuttall oak	-	-					
	White oaks	-	-					
Leeper ** clay to silty clay loam 0-5% slopes	Cottonwood	110	85-115	slight	severe	severe	Cottonwood Sweetgum Green ash Sycamore	1w6
	Sweetgum	95	90-105					
	Green ash	94	72-99					
	Sycamore							
	Hackberry							
	Elms							
Lucy loamy fine sand to loamy sand 0-17% slopes	Loblolly pine	84	76-89	slight	moderate	moderate	Loblolly pine Slash pine	3s2
	Shortleaf pine	73±4	67-78					
Luverne loam to loamy sand 0-30% slopes slight to moderate eroded.	Loblolly pine	83	76-88	slight to moderate	moderate	slight	Loblolly pine Shortleaf pine	3c2
	Shortleaf pine	73	67-78					
silty clay 8-30% slopes severely eroded	Loblolly pine	74	65-79	moderate	moderate	moderate	Loblolly pine	4c2
	Shortleaf pine	64	58-70					
Mantachie ** loam to fine sandy loam 0-5% slopes	Loblolly pine	98±7	90-106	slight	severe	moderate to severe	Loblolly pine Cottonwood Sycamore Yellow-poplar Cherrybark oak Nuttall oak Green ash Sweetgum	1w9
	Sweetgum	100±6	88-107					
	Cottonwood	92	72-102					
	Green ash	88±10	66-93					
	Cherrybark oak	101±4	89-106					
	Nuttall oak	-	99-111					
	Water oak	94±5	82-101					
	Willow oak	96±6	86-100					
	Shumard oak	-	-					
	Sycamore	-	-					
	Yellow-poplar	-	-					
	Tupelos	-	-					
	Black walnut	-	-					
	Red oaks	-	-					
	White oaks	-	-					
	Hackberry	-	-					
Marietta ** silt loam to very fine sandy loam 0-5% slope	Sweetgum	-	90-105	slight	moderate	moderate	Sweetgum Cottonwood Yellow-poplar Sycamore	1w5
	Cottonwood	-	90-110					
	Green ash	-	80-100					
	Sycamore	-	-					
	Yellow-poplar	-	-					
	Red oaks	-	-					
	White oaks	-	-					
	Hackberry	-	-					
	Elms	-	-					

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Mashulaville ** loam to sandy loam 0-5% slopes	Sweetgum Loblolly pine Water oak Shumard oak White oaks	- 85 - - -	70-85 80-90 65-80 - -	slight	severe	severe	Sweetgum Loblolly pine Shumard oak	3w9
Mayhew silty clay to silt loam 0-5% slopes	Loblolly pine Sweetgum Water oak Sycamore Cottonwood	86±6 90* 90* - -	80-95 80-100 80-100 - -	slight	severe	severe	Loblolly pine Sycamore Cottonwood	2w9
McLaurin loam to loamy sand 0-17% slope slight to mod. eroded.	Loblolly pine Shortleaf pine	83 70	75-86 65-76	slight	slight	slight	Loblolly pine Shortleaf pine	3o1
Myatt ** silt loam to fine sandy loam 0-5% slopes	Loblolly pine Sweetgum Water oak Willow oak Shumard oak Yellow-poplar Sycamore Red oaks White oaks Tupelos	95±6 92 86 74 - - - - - -	88-102 77-99 71-93 70-80 - - - - - -	slight	severe	severe	Loblolly pine Shumard oak Sweetgum Yellow-poplar	2w9
Norfolk sandy loam to loamy sand 0-17% slopes slight or moderate eroded	Loblolly pine Shortleaf pine	80 70	75-85 65-75	slight	slight	slight	Loblolly pine Slash pine Shortleaf pine	3o1
Ochlockonee ** silt loam to sandy loam 0-5% slopes	Loblolly pine Sweetgum Cherrybark oak Nuttall oak Water oak Red oaks Sycamore Yellow-poplar Black cherry Black walnut Black tupelo Cottonwood White oaks Hackberry Elms	95±6 90±5 87 85* 82	89-105 78-99 75-94 73-92 70-89	slight	slight	slight	Loblolly pine Sweetgum Sycamore Yellow-poplar Cherrybark oak Shumard oak	2o7
Oktibbeha clay to silt loam 0-12% slopes slight or moderate eroded	Loblolly pine Shortleaf pine E. Redcedar S. red oak	76±5 66±4 45 70*	69-82 60-72 40-50 65-75	slight	moderate	moderate	Loblolly pine E. redcedar	3c8

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TABLE 2. SOIL RATINGS FOR WOODLAND USE

Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ora silt loam to sandy loam 0-12% slopes	Loblolly pine Shortleaf pine Sweetgum	83±5 69±6 80*	76-89 63-76 75-85	slight	slight	slight	Loblolly pine Slash pine	3o7
Orangeburg loam to loamy sand 0-17% slopes slightly to moderately eroded	Loblolly pine Shortleaf pine	80 70	75-85 65-75	slight	slight	slight	Loblolly pine Slash pine Shortleaf pine	3o1
Paden silt loam to fine sandy loam 0-12% slopes	Loblolly pine Shortleaf pine Sweetgum	81±4 75±5 80	75-87 70-80 75-85	slight	slight	slight	Loblolly pine Slash pine	3o7
Pheba sandy loam to loamy sand 0-5% slopes	Loblolly pine Shortleaf pine Sweetgum Water oak Cherrybark oak Shumard oak	87±7 79±5 90* 90* - -	80-95 73-85 80-100 80-100 - -	slight	moderate	slight	Loblolly pine Sweetgum Shumard oak Cherrybrak oak	2w8
Prentiss silt loam to fine sandy loam 0-5% slopes	Loblolly pine Shortleaf pine Sweetgum Red oaks White oaks	88 79 - - -	83-96 75-85 80-95 - -	slight	slight	slight	Loblolly pine Slash pine Cherrybark oak	2o7
Quitman sandy loam 0-5% slopes	Loblolly pine Sweetgum Water oak Red oaks White oaks	93±4 - - - -	86-98 80-100 80-100 - -	slight	moderate	slight	Loblolly pine Cherrybark oak Shumard oak	2w8
Ruston fine sandy loam 0-17% slopes slightly to severely eroded	Loblolly pine Shortleaf pine	84±5 75±4	76-90 66-80	slight	slight	slight	Loblolly pine Slash pine	3o1
Saffell gravelly fine sandy loam 0-30% slopes slightly to moderately	Loblolly pine Shortleaf pine	75±7 65±5	68-84 60-72	slight	slight	moderate	Shortleaf pine Loblolly pine	4f2
Savannah silt loam to loamy sand 0-12% slopes	Loblolly pine Shortleaf pine S. red oak	81±5 76±4 75	75-86 70-81 70-80	slight	slight	slight	Loblolly pine Slash pine	3o7
Sawyer silt loam to loamy sand 0-5% slopes	Loblolly pine Shortleaf pine Sweetgum Red oaks White oaks	86 76 90 - -	80-95 70-85 80-95 - -	slight	moderate	slight	Loblolly pine Slash pine	2w8

TABLE 2. SOIL RATINGS FOR WOODLAND USE

Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Stough ** silt loam to sandy loam 0-5% slopes	Loblolly pine Sweetgum Red oaks White oaks Black tupelo	88±5 - - - -	82-95 75-90 - - -	slight	moderate	slight	Loblolly pine Cherrybark oak Shumard oak Sweetgum	2w8
Sumter clay to silty clay loam 0-17% slopes slightly severely eroded	E. redcedar	37±5	32-45	moderate	moderate	moderate	E. redcedar	4c2c
Susquehanna sandy clay loam to fine sandy loam 0-17% slopes slightly to moderately eroded	Loblolly pine Shortleaf pine	78±5 68±5	72-85 60-76	slight	moderate	slight	Loblolly pine Shortleaf pine	3c2
clay 8-30% slopes, severe. eroded	Loblolly pine Shortleaf pine	73 63	67-78 60-70	moderate	moderate	moderate	Loblolly pine	4c2
Trinity ** clay to clay loam 0-5% slopes	Cottonwood Green ash Sweetgum Sycamore Elms Hackberry	- - - - - -	85-115 75-100 - - - -	slight	moderate	moderate	Cottonwood Sweetgum Sycamore	1w6
Troup sandy loam to loamy sand	Loblolly pine Shortleaf pine	80	75-85	slight	moderate	moderate	Loblolly pine Slash pine Shortleaf pine	3s2
Tuscumbia ** clay to silty clay loam 0-5% slopes	Sweetgum Cottonwood Green ash Sycamore Red oaks White oaks Hackberry Elms	- - - - - - - -	80-90 90-105 85-105 - - - - -	slight	moderate	severe	Sweetgum Cottonwood Green ash Sycamore	2w6
Una ** clay to silty clay loam 0-5% slopes	Sweetgum Cottonwood Green ash Sycamore Water tupelo Red oaks Water oaks Hackberry	101±8 90* 94±3	87-103 80-100 72-106	slight	moderate	severe	Sweetgum Cottonwood Green ash Nuttall oak Sycamore	2w6
Vaiden clay to silty clay loam 2-17% slopes slightly severely eroded	Loblolly pine Shortleaf pine E. redcedar S. red oak	76±5 68 45 70	70-85 65-76 40-50 66-78	slight	moderate	moderate	Loblolly pine E. redcedar	3c8

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TABLE 2. SOIL RATINGS FOR WOODLAND USE

Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Wagram loamy sand to sand 0-17% slopes	Loblolly pine Shortleaf pine	80 70	75-85 65-75	slight	moderate	moderate	Loblolly pine Slash pine Shortleaf pine	3s2
Watsonia clay to silty clay 0-8% slopes	E. redcedar	40	35-45	slight	moderate	severe	E. redcedar	4d3c
Wilcox silty clay to silty clay loam 0-12% slipes slightly to moderately eroded	Loblolly pine Shortleaf pine E. redcedar	81±3 68±5 45	76-85 63-75 40-50	slight	moderate	moderate	Loblolly pine E. redcedar	3c2

* Estimated site index based on a similar soil or another species on the same soil.

** Information for broadleaf trees developed by Walter S. Broadfoot, U. S. Forest Service, Sou. Experiment Station.

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TABLE 3 . SOIL GROUPINGS ACCORDING TO WOODLAND SUITABILITY

Woodland Suitability Group (Symbol and Description)	Soils	Productivity		Species Suitability for Planting
		Tree Species	Site Class	
(1)	(2)	(3)	(4)	(5)
1w5 Seasonally wet soils with very high potential productivity; moderate equipment limitations and seedling mortality; best suited for southern hardwoods.	Catalpa silty clay to silty clay loam, 0-5% slopes. Marietta silt loam to very fine sandy loam, 0-5% slopes	Sweetgum Cottonwood Sycamore Green ash Hackberry Elms Yellow-poplar Red oaks White oaks	100 100-110 - - - - - - -	Sycamore Cottonwood Sweetgum Yellow-poplar
1w6 Excessively wet soils with very high potential productivity; severe equipment limitations and moderate to severe seedling mortality; best suited for southern hardwoods.	Houlka clay to silty clay loam, 0-5% slopes. Kaufman clay, 0-5% slopes Leeper clay to silty clay loam, 0-5% slopes Trinity clay to clay loam, 0-5% slopes	Sweetgum Cottonwood Sycamore Yellow-poplar Water oak Red oak White oaks Green ash	100 100-110 - - 100 - -	Sweetgum Cottonwood Sycamore Cherrybark oak Nuttall oak
1w8 Seasonally wet soils with very high productivity; moderate equipment limitations and slight to moderate seedling mortality; suitable for southern hardwoods or pines.	Iuka silt loam to fine sandy loam, 0-5% slopes	Sweetgum Loblolly pine Cottonwood Water oak Red oak Sycamore White oaks	100 100 100 100 - - -	Loblolly pine Sweetgum Sycamore Cottonwood Cherrybark oak Nuttall oak
1w9 Excessively wet soils with very high productivity; severe equipment limitations and moderate to severe seedling mortality; suitable for southern hardwoods or pines	Mantachie loam to fine sandy loam, 0-5% slopes	Sweetgum Loblolly pine Cottonwood Sycamore Yellow-poplar Tupelos Black walnut Water oaks Red oaks White oaks Hackberry Ash	100 100 - - - - - - - -	Sweetgum Loblolly pine Cottonwood Yellow-poplar Nuttall oak Cherrybark oak Green ash
2o7 Loamy soils with high potential productivity; no serious management problem; suitable for southern pines or hardwoods.	Cahaba sandy loam to loamy fine sand, 0-12% slopes (lower slopes and terraces) Forkland fine sandy loam to loam, 0-5% slopes Kalmia loamy sand, 0-12% slopes (lower slopes and terraces) Ochlockonee silt loam to sandy loam, 0-5% slopes Prentiss silt loam to sandy loam, 0-5% slopes.	Loblolly pine Sweetgum Sycamore Yellow-poplar Water oaks Red oaks White oaks Black cherry Black walnut Black tupelo	90 90 - - - - - - - -	Loblolly pine Sweetgum Yellow-poplar Cherrybark oak
2w6 Excessively wet soils with high potential productivity; severe equipment limitations and moderate to severe seedling mortality; best suited for southern hardwoods.	Tuscumbia clay to silty clay loam, 0-5% slopes Una clay to silty clay loam, 0-5% slopes	Sweetgum Cottonwood Green ash Sycamore Water tupelo Red oaks White oaks Hackberry	90 90-100 90 - - - - -	Sweetgum Cottonwood Sycamore Nuttall oak Green ash

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TABLE 3. SOIL GROUPINGS ACCORDING TO WOODLAND SUITABILITY

Woodland Suitability Group (Symbol and Description)	Soils	Productivity		Species Suitability for Planting
		Tree Species	Site Class	
(1)	(2)	(3)	(4)	(5)
2w8 Seasonally wet soils with high productivity; moderate equipment limitations and slight to moderate seedling mortality; suitable for southern pines or hardwoods.	Angie fine sandy loam, 0-5% slopes Harleston loam to loamy fine sand, 0-12% slopes Izagora silt loam to fine sandy loam, 0-5% slopes Pheba sandy loam to loamy sand, 0-5% slopes. Quitman sandy loam, 0-5% slopes. Sawyer silt loam to loamy sand, 0-5% slopes. Stough silt loam to sandy loam, 0-5% slopes.	Loblolly pine Sweetgum Shortleaf pine Red oaks White oak Yellow-poplar	90 90 80 80 80	Loblolly pine Sweetgum Slash pine Yellow-poplar
2w9 Excessively wet soils with high productivity; severe equipment limitations and mortality; suitable for southern hardwoods or pines	Bibb very fine sandy loam to fine sandy loam, 0-5% slopes Chastain silt loam to fine sandy loam, 0-5% slopes. Leaf silt loam to fine sandy loam, 0-5% slopes. Mayhew silty clay to silt loam, 0-5% slopes Myatt silt loam to fine sandy loam, 0-5% slopes	Loblolly pine Sweetgum Water oak Yellow-poplar Red oaks White oaks Tupelos	90 90 90 - - - -	Loblolly pine Slash pine Sweetgum Sycamore Shumard oak
2c8 Clayey soils with high potential productivity; moderate equipment limitations and seedling mortality; suitable for southern hardwoods and pines	Kipling clay loam to fine sandy loam, 0-5% slopes	Sweetgum Loblolly pine Red oaks Water oaks White oaks	90 90 - - -	Loblolly pine Sweetgum Cherrybark oak Shumard oak
3o1 Loamy upland soils with moderately high productivity; no serious management problems; best suited for southern pines.	Aycock silt loam to fine sandy loam, 0-12% slopes slightly or moderately eroded Benndale fine sandy loam to loamy sand, 0-12% slopes, slightly to moderately eroded Bowie sandy loam to loamy fine sand, 0-12% slopes, slight or moderately eroded. Cahaba sandy loam to loamy fine sand, 5-17% slopes (upper slopes) slightly or moderately eroded. Carnegie loam to loamy fine sand, 0-8% slopes, slightly or moderately eroded. Kalmia loamy sand, 0-12% slopes (upper slopes) McLaurin loam to loamy sand 0-17% slopes, slight or moderately eroded Norfolk sandy loam to loamy sand, 0-17% slopes, slight or moderately eroded Orangeburg loam to loamy sand, 0-17% slopes, slight or moderately eroded Ruston fine sandy loam, 0-17% slopes, slight or moderately eroded (upper slopes)	Loblolly pine Shortleaf pine	80 70	Loblolly pine Shortleaf pine Slash pine

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TABLE 3. SOIL GROUPINGS ACCORDING TO WOODLAND SUITABILITY

Woodland Suitability Group (Symbol and Description)	Soils	Productivity		Species Suitability for Planting
		Tree Species	Site Class	
(1)	(2)	(3)	(4)	(5)
3o7 Upland soils with moderate high productivity; no serious management problems; suitable for southern pines and/or upland hardwoods	Ora silt loam to sandy loam 0-12% slopes Paden silt loam to fine sandy loam, 0-12% slopes Savannah silt loam to sandy loam, 0-12% slopes	Loblolly pine Sweetgum Shortleaf pine Red oaks White oaks	80 80 70 70 70	Loblolly pine Slash pine Cherrybark oak
3w9 Excessively wet soils with moderately high potential productivity; severe equipment limitations and moderate to severe seedling mortality; suitable for southern pines or hardwoods	Atmore silt loam to fine sandy loam, 0-5% slopes Mashulaville loam to sandy loam, 0-5% slopes	Loblolly pine Sweetgum Water oak Red oaks White oaks Shortleaf pine	80 80 80 - - -	Loblolly pine Sweetgum Shumard oak
3s2 Soils with sandy surfaces moderately high in productivity; moderate equipment limitations and moderate seedling mortality; best suited for southern pines	Lucy loamy fine sand to loamy sand, 0-17% slopes Troup loamy sand, 0-17% slopes Wagram loamy sand to sand, 0-17% slopes	Loblolly pine Shortleaf pine	80+ 70+	Loblolly pine Slash pine Shortleaf pine
3s3 Sandy soils with moderately high productivity; moderate equipment limitations and severe seedling mortality; best suited for southern pines.	Alaga loamy sand 0-30% slopes Bienville loamy sand, 0-12% slopes Eustis loamy fine sand to sand 0-17% slopes.	Loblolly pine Shortleaf pine	80- 70	Loblolly pine Slash pine Shortleaf pine
3c2 Clayey soils with moderately high productivity; moderate equipment limitations and slight to moderate seedling mortality; best suited for southern pines.	Boswell silt loam to sandy loam, 0-17% slopes, slight or moderately eroded Garner clay to clay loam, 0-12% slopes Luverne loam to sandy loam, 0-30% slopes, slight or moderately eroded Susquehanna sandy clay loam to fine sandy loam, 0-30% slopes, slight or moderately eroded. Wilcox silty clay to silty clay loam, 0-12% slopes slight or moderately eroded.	Loblolly pine Shortleaf pine	80 70	
3c8 Clayey soils with moderately high productivity; moderate equipment limitations and seedling mortality; suitable for southern hardwoods, southern pines, or redcedar.	Eutaw clay to silty clay loam, 0-5% slopes Oktibbeha clay to silt loam 0-12% slopes, slight or moderately eroded Vaiden clay to silty clay loam, 0-17% slopes, slight to severely eroded	Shortleaf pine Loblolly pine Sweetgum E. redcedar Red oaks White oaks	70 80 80 40-50 - -	Loblolly pine Shortleaf pine E. redcedar
4x2 Stony soils with moderate productivity; moderate equipment limitations; best suited for southern pines	Lauderdale stony sandy loam to stony loamy sand, 0-30%	Loblolly pine Shortleaf pine	70 60	Loblolly pine Shortleaf pine
4c2 Clayey soils with moderate productivity; moderate equipment limitations, erosion hazard, and seedling mortality; best suited for southern pines	Boswell silty clay or clay, 5-17% slopes, severely eroded Luverne silty clay, 5-30% slopes, severely eroded Susquehanna clay, 5-30% slopes, severely eroded	Loblolly pine	70	Loblolly pine

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TABLE 3. SOIL GROUPINGS ACCORDING TO WOODLAND SUITABILITY

Woodland Suitability Group (Symbol and Description)	Soils	Productivity		Species Suitability for Planting
		Tree Species	Site Class	
(1)	(2)	(3)	(4)	(5)
4c2c Clayey calcareous with moderate productivity; slight to moderate erosion hazard, moderate equipment limitations and seedling mortality; best suited for redcedar	Brooksville clay, 0-12% slopes, slight to severely eroded Houston clay, 0-12% slopes slight to severely eroded Sumter clay to silty clay loam, 0-17% slopes, slight to severely eroded	E. redcedar Osage orange (Bois d'arc)	40 -	E. redcedar
4d3c Shallow calcareous soils with moderate productivity; slight to moderate erosion hazard, moderate to severe equipment limitations and seedling mortality; best suited for redcedar	Binnsville clay to silty clay, 0-12% slopes; slight to severely eroded Watsonia clay to silty clay 0-8% slopes, slight to moderately eroded	E. redcedar	40	E. redcedar
4f2 Gravelly or cherty soils with moderate productivity moderate seedling mortality and slight to moderate equipment limitations	Guin gravelly fine sandy loam, 0-17% slopes, slight to moderately eroded Saffall gravelly fine sandy loam, 0-30% slopes, slight to moderately eroded.	Shortleaf pine Loblolly pine	60+ 70+	Shortleaf pine Loblolly pine

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